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RECENTLY PUBLISHED RESEARCH OF THE VORONEZH INSTITUTE OF CHEMICAL TECHNOLOGY

"Physicochemical Properties of Concentrates of Sulfite Alcohol Residues," V. A. Smirnov, A. N. Bondarenko, Voronezh Chem Tech Inst

"Zhur Priklad Khimii" Vol 20, 1947, pp 97-104

The residue of the sulfite cellulose process, after fermentation of the hexoses, distillation of the alcohol, and utilization of the pentoses for the culture of the yeast Monilia murmanica, is usually concentrated through evaporation to 50-70% dry matter (mostly lignosulfonates); of this, about 80% are organic substances, 20% inorganic; the amount of reducing matter is about 8-9%; pH 5.8-6.3. The average density of the dry matter, extrapolated from that of the concentrate, is 1.7268 at 20°; the density of the lye with a dry matter content a is $d = 172.68/(172.68 - 0.7268a)$. From the curve of n against a, the dry matter has $\eta_D^{20} = 1.663$. The viscosity ($\eta$) curves against a are identical for samples of different origins; example of data, a = 5, 20, 35, 50% at 20°: $\eta$ = 1.2, 2.5, 12.5, 515 centipoises; at 60°, $\eta$ = 0.6, 1.2, 3.7, 45. The surface tension $\gamma$ falls linearly with increasing a; the absolute values of $\gamma$ vary according to the origin. The foaming ability decreases with increasing a; it decreases with decreasing $\gamma$ and depends more on $\eta$ the higher a; higher temperature favors foaming but has a negative effect on the stability of the foam; alkalinization has a similar effect while acidification has no influence.

"Adsorption of Coloring Substances on Collactivite Carbon," V. A. Smirnov, S. E. Goncharenko, Voronezh Chem Tech Inst

"Zhur Priklad Khimii" Vol 20, 1947, pp 449-53



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Decolorization was determined with the Stammer colorimeter on 50-ml samples of a 6% solution of technical xylose, density 1.03, initial color 557.1° Stammer treated with 0.25 g. Collactivite (made from hydrolytic cellolignin) at 80° for one hour. Acidification of the solution decreased the color which was again restored on neutralization; hence, the coloring substance is a weak organic acid with colored (yellow) anion, formed in the decomposition of xylose. Collactivite decolorized the neutral solution by 74.2%; its decolorizing effect diminished with increasing addition of $H_2SO_4$. Collactivite can be considered to be a $H^+$ zeolite, exchanging its $H^+$ with the cations of the coloring substances and thus converting the colored anions into the colorless undissociated organic acids. The decolorizing effect of Collactivite lags behind that of Norite, e.g., with 1.00, 5.47, 10.93, 13.66% of either carbon (per weight of the dry matter of the solution), the decolorization attained was, with Norite, 61.4, 96.7, 98.1, 98.8%, with Collactivite 22.6, 64.8, 75.0, 76.2. The effect of Collactivite never exceeds 80% decolorization, that of Norite does attain 100%. The most economical amounts are, for Norite, 5%, for Collactivite 8-10% (per weight of dry matter). As a function of time of contact, after 10, 20, 30, 60 minutes Norite produced 68.6, 87.2, 94.7, 96.7% decolorization, Collactivite 28.2, 46.2, 55.2, 60.0%, i.e., establishment of adsorption equilibrium is slower with the latter. Adsorption with Collactivite is fully reversible.

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